

REMARKS

I. Summary of the Examiner's Action

A. Claim Rejections

The Examiner rejected claims 1 – 16, 18 and 21 – 23 under 35 U.S.C. § 102(e) as being anticipated by United States Patent Application No. 2002/0097750 to Gunaseelan *et al.* (hereinafter “the Gunaseelan application”).

The Examiner rejected claims 16 – 17 and 19 – 20 under 35 U.S.C. § 103(a) as being unpatentable over the Gunaseelan application in view of United States Patent No. 6,842, 433 to West *et al.* (hereinafter “the West patent”).

II. Applicant's Response

A. Claim Amendments

Applicants have amended the claims to improve their overall quality. Applicants did not amend the claims for the purposes of patentability since the claims, both in their pre-amended, and post-amended states, are patentable over the art of record.

B. Rejection of Claims 1 – 16, 18 and 21 – 23 under 35 U.S.C. § 102(e)

Applicants' invention generally concerns methods and apparatus for use in the streaming of data over packet-based networks. Claim 1, as amended, recites the following subject matter (emphasis added):

1. A method of streaming media data comprising:

transmitting a plurality of encoded data packets over a network from a source server to a client device wherein the client device comprises a decoder for decoding the encoded packets, wherein the client device further comprises a pre-decoder buffer having a variable initial buffering time and a variable buffer size;

receiving the data packets transmitted by the source server at the pre-decoder buffer of the client device prior to decoding in the decoder of the client device; and
dynamically adapting the variable initial buffering time and the variable buffer size of the pre-decoder buffer for improving playback performance of the client device.

Applicants respectfully submit that it is not seen where the Gunaseelan application either describes or suggests the emphasized subject matter of claim 1.

As background, Applicants describe at page 3, lines 23 – 29 situations where data rates associated with data streams varies:

“This means that the information required to reconstruct a predictively encoded video sequence is not equally distributed amongst the transmitted data packets. In other words, a larger number of data packets is required to carry the data related to an INTRA frame than is required to carry the data for an INTER frame. Furthermore, as the amount of data required to represent consecutive INTER frames also

varies depending on image content, the number of data packets required to carry INTER frame data also varies.”

In such situations, Applicants set forth at page 4, lines 26 – 31 that it has been determined that

“... initial buffering enables the accommodation of fluctuations in transmitted data rate from the aforementioned disadvantages i.e., encoding or server-specific delay variation and network transmission related delay variation. Initial buffering helps to provide a more stable audio-visual quality and to avoid network congestion and packet losses.”

Applicants’ invention, as explained at page 14, lines 16 – 28 (emphasis added), provides an improved method for initial buffering comprising the use of a pre-decoder buffer where:

“According to the preferred embodiment of the invention, the pre-decoder initial buffering time and/or pre-decoder buffer size in the client are adapted according to the previously described process whenever streaming of a new media stream is initiated. If it is determined during the process that the new media stream can be played back correctly at the client using the currently valid pre-decoder buffering parameters, no adjustments are necessary. Additionally, the client may adjust its pre-decoder initial buffering time and/or pre-decoder buffer size in a situation where the server signals a change in required pre-decoder buffer parameters during an existing streaming session. This situation may arise, for example, if different consecutive sections of the media content to be streamed are encoded differently, giving rise to a need for different pre-decoder buffering at the client to ensure correct playback of the stream.”

Accordingly, in Applicants' invention as claimed in, for example, claim 1, playback performance of the client device is improved "by dynamically adapting the variable initial buffering time and the variable buffer size of the pre-decoder buffer."

The Gunaseelan application shows no appreciation for this mode of operation as recited in claim 1. Applicants have carefully reviewed the portions of the Gunaseelan application relied upon by the Examiner and nowhere is there described or suggested "dynamically adapting the variable initial buffering time and the variable buffer size of the pre-decoder buffer for improving playback performance of the client device" as recited in claim 1.

Rather, the Gunaseelan application, as disclosed at paragraphs [0039] and [0040] (reproduced here)(emphasis added), operates with reference to time stamps applied to data packets, and is not seen to dynamically adapt either the variable initial buffering time or the variable buffer size as in Applicants' invention:

"Traditionally, client side buffers located in memory 154 of the client 104 are used to smooth out the jitter in the arrival rate of data at the client side. There are two parameters that are critical in client-side buffering. They are (i) the amount of data pre-read before the playout starts (pre-read size), and (ii) the size of the client size buffer (max buffer size). The pre-read size and max buffer size parameters impose the maximum limits on how late or how early a packet can arrive. When media is streamed at a fairly constant rate, if the arrival rate of data into the buffer matches the consumption rate of data by the decoder, then there

should be pre-read size data left in the buffer. However, since the data can arrive late or early, buffering helps. The pre-read size data in the client's buffer protects against buffer underflow, if the data is received in time. The max buffer size protects against overflow of the client's buffer if data starts arriving earlier than expected.

Embodiments of the present invention allow a packet's time stamp to be adjusted based on the client side pre-read size and/or max buffer size parameters. Directing attention to FIG. 14, when a client 104 requests delivery of a media asset from the server 102, the server 102 can query the client 104 for values corresponding to the client's pre-read size and max buffer size parameters. If it is known that a client pre-reads one second's worth of data, then a packet going to that client can be delayed up to a maximum of one second. Also, if it is known that a client 104 has a max buffer size to hold up to, for example, 10 seconds worth of data, then a packet can be sent to the client 104 as early as 10 seconds ahead of its timestamp."

Applicants' invention simply does not operate in this manner.

For the foregoing reasons, Applicants respectfully request that the Examiner withdraw the rejection of claim 1. Applicants respectfully submit that independent claims 18 and 22 are patentable for reasons similar to those concerning claim 1 and for other reasons attributable to their unique features. As a result, Applicants respectfully request that the rejection of independent claims 18 and 22 be withdrawn as well. Further, Applicants respectfully request that the rejection of dependent claims 2 – 15, 21 and 23

be withdrawn for reasons similar to those recited with respect to claim 1 and for other reasons attributable to their unique features.

B. Rejection of Claims 16 – 17 and 19 – 20 under 35 U.S.C. § 103(a)

Applicants respectfully submit that West adds nothing to the disclosure of Gunaseelan to overcome the foregoing arguments. Accordingly, claims 17 and 19 – 20 are patentable as depending, either directly or indirectly, from allowable base claims. Accordingly, Applicants respectfully request that the rejection of these claims be withdrawn. The cancellation of claim 16 has mooted the rejection of this claim.

III. Conclusion

The Applicants submit that in light of the foregoing remarks the application is now in condition for allowance. Applicants therefore respectfully request that the outstanding rejections be withdrawn and that the case be passed to issuance.

Respectfully submitted,

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Date

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